

Complete Summary

GUIDELINE TITLE

Disorders of the elbow.

BIBLIOGRAPHIC SOURCE(S)

Work Loss Data Institute. Disorders of the elbow. Corpus Christi (TX): Work Loss Data Institute; 2003. 78 p. [100 references]

COMPLETE SUMMARY CONTENT

SCOPE

METHODOLOGY - including Rating Scheme and Cost Analysis

RECOMMENDATIONS

EVIDENCE SUPPORTING THE RECOMMENDATIONS

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

CONTRAINDICATIONS

IMPLEMENTATION OF THE GUIDELINE

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT

CATEGORIES

IDENTIFYING INFORMATION AND AVAILABILITY

SCOPE

DISEASE/CONDITION(S)

Work-related disorders of the elbow including fracture or dislocation, sprain or contusion, laceration, medial epicondylitis, lateral epicondylitis, olecranon bursitis, ulnar nerve entrapment, and radial nerve entrapment

GUIDELINE CATEGORY

Diagnosis
Management
Treatment

CLINICAL SPECIALTY

Emergency Medicine
Family Practice
Internal Medicine
Orthopedic Surgery

INTENDED USERS

Advanced Practice Nurses
Health Care Providers
Health Plans
Nurses
Physicians

GUIDELINE OBJECTIVE(S)

To offer evidence-based step-by-step decision protocols for the assessment and treatment of workers' compensation conditions

TARGET POPULATION

Workers with disorders of the elbow

INTERVENTIONS AND PRACTICES CONSIDERED

1. Acupuncture
2. Chiropractic care
3. Cold packs
4. Corticosteroid injections
5. Patient education
6. Exercise
7. Laser Doppler imaging
8. Manipulation
9. Neural tension
10. Night splints
11. Nonprescription medications, such as acetaminophen and nonsteroidal anti-inflammatory drugs (NSAIDs)
12. Orthotic devices
13. Physical therapy
14. Returning to work with modified or full duty as soon as possible
15. Soft tissue mobilization (including augmented soft tissue mobilization [ASTM])
16. Splinting
17. Stretching
18. Surgery
19. Tennis elbow band
20. Ulnar motor nerve conduction velocity at the elbow
21. Ultrasound

The following interventions were considered, but are either not currently recommended or not specifically included as major recommendations:

1. Augmented soft tissue mobilisation (ASTM)
2. Biofeedback
3. Brace
4. Diathermy
5. Electrical stimulation (E-STIM)
6. Extracorporeal shockwave therapy (ESWT)
7. Friction massage
8. Iontophoresis
9. Laser treatment (LLLT)

10. Massage
11. Phonophoresis
12. Transcutaneous electrical neurostimulation (TENS)

MAJOR OUTCOMES CONSIDERED

- Sensitivity and specificity of diagnostic tests
- Effectiveness of treatment for relief of pain and other symptoms

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Ranking by quality within type of evidence:

- a. High Quality
- b. Medium Quality
- c. Low Quality

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Not stated

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not applicable

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Initial Diagnosis

- First visit: with Primary Care Physician MD/DO (100%)
- Determine cause: Initial Evaluation:
 - Determine the type of trauma (e.g., fall, repetitive motion, twisting).
 - Determine whether the problem is acute, subacute, chronic, or of insidious onset.
 - Determine the severity and specific anatomic location of the pain.
 - Grade the patient's pain.
 - Assess the ability of the patient to use the elbow, from no to full ability.
 - Search for any evidence of an open or penetrating wound.
 - Test the range-of-motion of the joint (normal, mild restriction, severe restriction).
 - Search for any evidence of vascular or nerve injury distal to the injury.
 - Determine any present medication.
 - Determine any previous medical history, history of systemic disease, or previous elbow injury or disability.
- Initial diagnosis (Refer to the original guideline document for ICD-9 codes):
 - Traumatic (Go to Fractures and Dislocations):
 - Fracture or dislocation
 - Other (Go to Conservative Treatment):
 - Sprain or contusion
 - Laceration
 - Epicondylitis, medial
 - Epicondylitis, lateral
 - Olecranon bursitis
 - Ulnar nerve entrapment
 - Radial nerve entrapment

Fracture or Dislocation of Elbow (35% of cases)

- Definitive Evaluation:
 - Search for any evidence of an open wound in the vicinity of the fracture.
 - Perform a clinical examination for deformity, tenderness, or ecchymosis, or associated nerve, neurovascular, or tendon injury. Also look for the inability to perform spontaneous movement of the elbow.
 - Search for any evidence of dislocation and arterial vascular compromise (cold, dusky hand and forearm with loss of sensation). If found, an immediate reduction should take place (prior to x-rays if necessary).
 - X-ray the elbow. Special views should be obtained when necessary.
- Initial Therapy
 - Simple, undisplaced, stable fractures of the elbow can be treated by the primary care physician.
 - Apply a sling and/or a posterior splint with medial and lateral gutter splints. A portion of patients should be converted to a long arm cast after 10 to 14 days. Immobilization should continue for four to six weeks.
 - Ice and elevation whenever lying down for the first 72 hours
 - Analgesics and/or nonsteroidal anti-inflammatory drugs for up to two weeks
 - Aspirating the radiohumeral joint and injection of local anesthetic to evacuate hematoma is appropriate to relieve pain in selected cases of radial head fractures.
 - Physical therapy (3 to 6 visits) to teach patient range-of-motion and muscle-strengthening exercises out of the splint should begin as soon as tolerated at two to four weeks.
 - Recheck at seven days, then at two-week intervals until healed. Repeat x-rays at seven days and at two weeks to assure that the fracture has not slipped. X-ray again at five weeks.
 - Complex, displaced, or unstable fractures should be immobilized and referred to an orthopedic surgeon. Compound fractures, when appropriate, should have a tetanus toxoid injection before being referred to a surgeon.
 - Dislocations of the elbow are accompanied by significant ligament injuries. Even if full reduction has been achieved, orthopedic referral is appropriate.

Official Disability Guidelines (ODG) Return-To-Work Pathways – Fracture

Stable, clerical/modified work: 2 days

Stable, manual work: 14 days

Reduction/manipulation, clerical/modified work: 14 days

Reduction/manipulation, manual work: 28 days

Reduction/manipulation, heavy manual work: 42 days

ODG Return-To-Work Pathways – Dislocation

Non-dominant arm, clerical/modified work: 0 days

Non-dominant arm, manual work: 10 days

Non-dominant arm, heavy manual work: 21 days

Dominant arm, clerical/modified work: 7 days

Dominant arm, manual work: 21 days

Dominant arm, heavy manual work: 42 days

- Secondary Evaluation for patients with persistent symptoms or minimal improvement after six weeks of therapy
 - Review for compliance of the employee and employer to therapy programs and job modifications and restrictions. Also review for insurance company cooperation.
 - Evaluate for delayed union, malalignment, or signs of associated tendon or nerve injury.
 - Promptly refer to an orthopedic surgeon if one of these conditions is found.

Initial Conservative Treatment (65% of cases)

- Definitive Evaluation:
 - Typical symptoms of lateral epicondylitis include pain in the lateral aspect of the elbow with pain or burning radiating to the forearm (and occasionally proximal radiation). There may be loss of grip strength due to forearm pain with hand grip. Pain is usually insidious in onset but may be provoked by an acute trauma or strain. Initial complaints may be vague, such as a dull forearm ache.
 - Specific attention should be directed towards confirming occupational risk factors, such as repetitive, sustained, or forceful wrist dorsiflexion, power grip, exposure to vibration, repetitive extended elbow reach with forceful pulling, and repetitive pronation and supination of the forearm against resistance.
 - Rule out non-occupational activities that could be causing or aggravating the condition, such as activities that require gripping or hyperextending the wrist.
 - Olecranon bursitis may be secondary to systemic illness.
 - A physical examination should be performed with documentation of the following findings:
 - Inspection for deformity, swelling or erythema
 - Provocative maneuvers, such as the presence or absence of pain with resisted dorsiflexion of the wrist, passive wrist flexion with the elbow in full extension, resisted supination of the forearm, and Tinel's sign

- Range of motion: elbow flexion and extension, pronation and supination, wrist flexion and extension. Note any flexion contracture deformity of the elbow.
- Palpation: Document the presence or absence of the following: elbow deformity, tenderness, heat, or crepitus (including olecranon process and medial epicondyle). Also check the forearm for deformity, heat or tenderness.
- Muscle strength testing of the entire upper extremity should be performed as relevant.
- Appropriate distal extremity exam should include neurological testing. A routine examination of the shoulder, neck, wrist, and hand (palpation, range of motion, strength testing) should be performed.
- A differential diagnosis should be considered at this point, such as radiculopathy or shoulder pathology with referred pain.
- As a rule, the diagnosis of elbow problems does not require an imaging study.
- Appropriate laboratory studies should be considered if there is evidence of an infectious or diffuse inflammatory process as a contributing or causative factor.
- Nerve conduction studies may be indicated for elbow problems associated with neurological deficits.
- Aspiration of the olecranon bursa is not routinely indicated unless there is suspicion of infection or metabolic disease.
- Initial Treatment
 - The purpose of the initial treatment is to reduce symptoms, optimize healing/function, and increase work, with appropriate modifications to minimize the risk factors that contributed to the injury.
 - All injured workers should receive instruction concerning the nature of their condition, its risk factors, preventive measures, and goals of initial therapy. The injured worker should be instructed on how to eliminate or modify any aggravating non-occupational activities and sports during treatment.
 - Work restrictions or modifications that reduce the injured worker's exposure to the etiologic or aggravating activity are of central importance. Examples of such restrictions include preclusion from or reduction in time performing tasks requiring repetitive, sustained, or repetitive forceful wrist or hand activities, repetitive elbow motion, prolonged elbow positioning, or prolonged exposure to vibration.
 - Nonsteroidal anti-inflammatory agents (NSAIDs) can be used. Acetaminophen is an analgesic that may be used as an adjunct or alternative to NSAIDs.
 - Physical treatments and passive modalities: If there is no improvement after 2 weeks, the treatment should be modified. Use of thermal modalities in conjunction with physical treatment may be useful. Physical treatments for pain management, splinting, and/or functional retraining and instruction in a graded exercise program. Appropriate exercises may include, but are not limited to 1) gentle muscle stretching, 2) flexibility, and 3) graduated strengthening. Care should be taken while incrementing exercises so that the condition is not aggravated. Appropriate manual therapies may include manipulation, or joint or soft tissue mobilization, supplemented by physical modalities and exercise.

- Acupuncture: Use of acupuncture in the first 4 weeks of treatment as a part of an overall treatment plan
- Protective devices: The use of an elbow and/or wrist support for immobilization may be indicated for a brief period. The use of a splint at work must be carefully considered, as it may put the injured worker at risk for further musculoskeletal injury by forcing the adoption of awkward compensatory postures. A forearm strap can be aggravating in the acute stage, so its use should be individualized. It is contraindicated in the presence of nerve compression symptoms. Night splinting may be indicated for nerve entrapment syndromes.
- Local corticosteroid injection: Local corticosteroid injections of the myofascial areas or bursae may be appropriate, especially if the pain is moderate to severe. Before the injection, it is important to be aware that the olecranon bursa may be the site of infection. In such an instance, a steroid injection would be contraindicated.
- Surgery is rarely indicated
- Secondary Assessment
 - A reconsideration of the initial diagnosis is necessary at this stage, and a differential diagnosis should be reviewed: cervical radiculopathy, shoulder pathology with referred pain and nerve entrapment.
 - Diagnostic imaging: Radiographic studies of the elbow and forearm may be considered if, on re-evaluation, the physician suspects morphologic pathology. The use of magnetic resonance imaging (MRI) and arthrography is rarely indicated except for the evaluation of intra-articular pathology.
 - Laboratory studies: Laboratory studies may be performed if there is evidence of an infectious or diffuse inflammatory process as a contributing pathology.
 - Electromyography/nerve conduction studies (EMG/NCS): Electrodiagnostic studies should be considered if there is clinical evidence of nerve entrapment or cervical radiculopathy as alternative diagnoses.
 - Surgical referral: Surgical consultation may be recommended after failure of conservative treatment and indication of a surgically correctable condition.

ODG Return-To-Work Pathways – Sprain

Moderate, clerical/modified work: 4 days

Moderate, manual work: 21 days

Severe, clerical/modified work: 7 days

Severe, manual work: 35-42 days

ODG Return-To-Work Pathways – Contusion

Superficial contusions: 0 days

Deep contusions, clerical/modified work: 5 days

Deep contusions, manual work: 21 days

ODG Return-To-Work Pathways – Laceration

Minor: 0 days

Major, clerical/modified work: 3 days

Major, manual work: 8 days

ODG Return-To-Work Pathways – Epicondylitis, Medial

Without surgery, modified work: 0 days

Without surgery, regular manual work: 7 days

Without surgery, heavy manual work: 42 days

ODG Return-To-Work Pathways – Epicondylitis, Lateral

Without surgery, modified work: 0 days

Without surgery, regular manual work: 7 days

Without surgery, heavy manual work: 42 days

Without surgery, heavy manual vibrating work, if cause of disability:
indefinite

With surgery (rare), modified work, non-dominant arm: 6 days

With surgery (rare), modified work, dominant arm: 21 days

With surgery (rare), regular work, non-dominant arm: 28 days

With surgery (rare), regular work, dominant arm: 42 days

Acupuncture (3-6 treatments): 7-21 days

ODG Return-To-Work Pathways – Olecranon Bursitis

Without surgery, modified work: 0 days

Without surgery, regular manual work: 4 days

Without surgery, heavy manual work: 35 days

ODG Return-To-Work Pathways – Ulnar Nerve Entrapment

Without surgery, modified work: 0 days

Without surgery, regular work: 14 days

With surgery, modified work: 14 days

With surgery, regular work, non-dominant arm: 21 days

With surgery, regular work, dominant arm: 49 days

ODG Return-To-Work Pathways – Radial Nerve Entrapment

Diagnostic testing: 0 days

Treatment, clerical/modified work: 14 days

Treatment, manual work: 42 days

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

During the comprehensive medical literature review, preference was given to high quality systematic reviews, meta-analyses, and clinical trials over the past ten years, plus existing nationally recognized treatment guidelines from the leading specialty societies.

The type of evidence associated with each recommended or considered intervention or procedure is ranked in the guideline's annotated reference summaries.

Ranking by Type of Evidence:

1. Systematic Review/Meta-Analysis
2. Controlled Trial–Randomized (RCT) or Controlled
3. Cohort Study--Prospective or Retrospective
4. Case Control Series
5. Unstructured Review
6. Nationally Recognized Treatment Guideline (from www.guideline.gov)
7. State Treatment Guideline
8. Foreign Treatment Guideline
9. Textbook
10. Conference Proceedings/Presentation Slides

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

These guidelines unite evidence-based protocols for medical treatment with normative expectations for disability duration. They also bridge the interests of the many professional groups involved in diagnosing and treating disorders of the elbow.

POTENTIAL HARMS

The use of a splint at work must be carefully considered, as it may put the injured worker at risk for further musculoskeletal injury by forcing the adoption of awkward compensatory postures. A forearm strap can be aggravating in the acute stage so its use should be individualized.

CONTRAINDICATIONS

CONTRAINDICATIONS

- A forearm strap is contraindicated in the presence of nerve compression symptoms.
- If the olecranon bursa is infected, a steroid injection would be contraindicated.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Work Loss Data Institute. Disorders of the elbow. Corpus Christi (TX): Work Loss Data Institute; 2003. 78 p. [100 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2003

GUIDELINE DEVELOPER(S)

Work Loss Data Institute - Public For Profit Organization

SOURCE(S) OF FUNDING

Not stated

GUIDELINE COMMITTEE

Not stated

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Not stated

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available to subscribers from the [Work Loss Data Institute Web site](#).

Print copies: Available from the Work Loss Data Institute, 169 Saxony Road, Suite 210, Encinitas, CA 92024; Phone: 800-488-5548, 760-753-9992, Fax: 760-753-9995; www.worklossdata.com.

AVAILABILITY OF COMPANION DOCUMENTS

Background information on the development of the Official Disability Guidelines of the Work Loss Data Institute is available from the [Work Loss Data Institute Web site](#).

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on February 2, 2004. The information was verified by the guideline developer on February 13, 2004.

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